

An Hydrological Data Base of Time Water Levels on Rivers and Lakes from Altimetry

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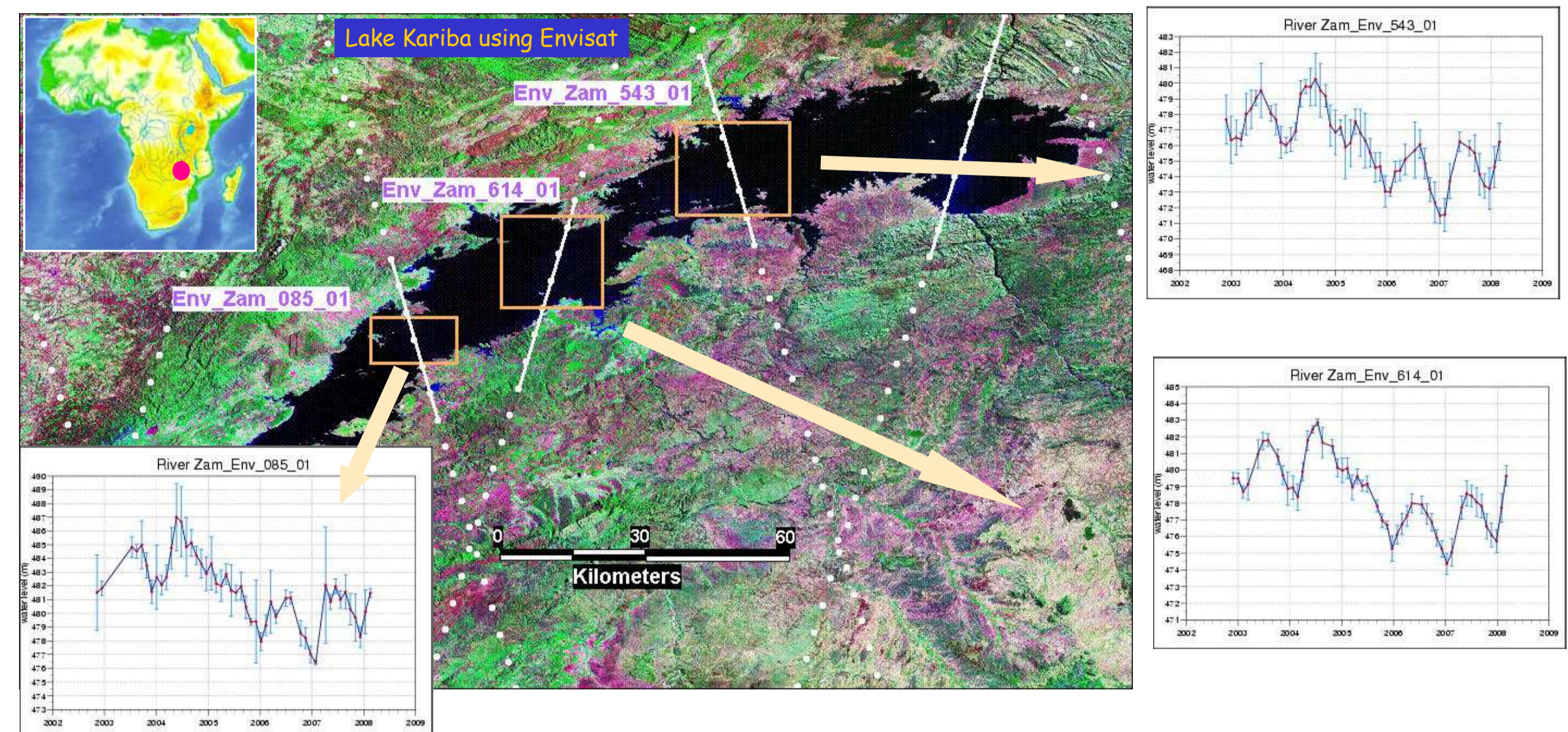
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Summary :

In the recent years, we have developed the HYDROWEB data base (<http://www.legos.obs-mip.fr/soa/hydrologie/hydroweb/>) which provides offline water level time series on rivers, lakes and floodplains based on altimetry data from several satellites (Topex/Poseidon, ERS, Jason-1, GFO and ENVISAT). For a number of applications (e.g., flood prediction, fluvial navigation, etc.), Near Real Time (NRT) water levels are required. For that purpose, we have implemented an experimental process to compute NRT water levels on rivers from ENVISAT satellite altimetry data. We use Interim Geophysical Data Records (IGDRs) at 20Hz, available about 48 h after the satellite flyby over the river. The IGDRs are processed through an automatic procedure with almost similar quality control as for offline GDRs. All valid 20 Hz IGDRs data of a single satellite-river crossing are further averaged to provide a mean river water level at the time of the satellite crossing. The NRT water level products can be made available on the HYDROWEB data base within two days of IGDRs reception, i.e., at most four days after data acquisition by the satellite. Validation tests have been conducted on the Congo River. NRT and offline water levels have been compared, showing that NRT products precision is not significantly different from offline products precision, a result of the high quality of the DORIS-based orbit computed onboard. These time series will be used for validation of the Jason-2 future time series over major rivers.

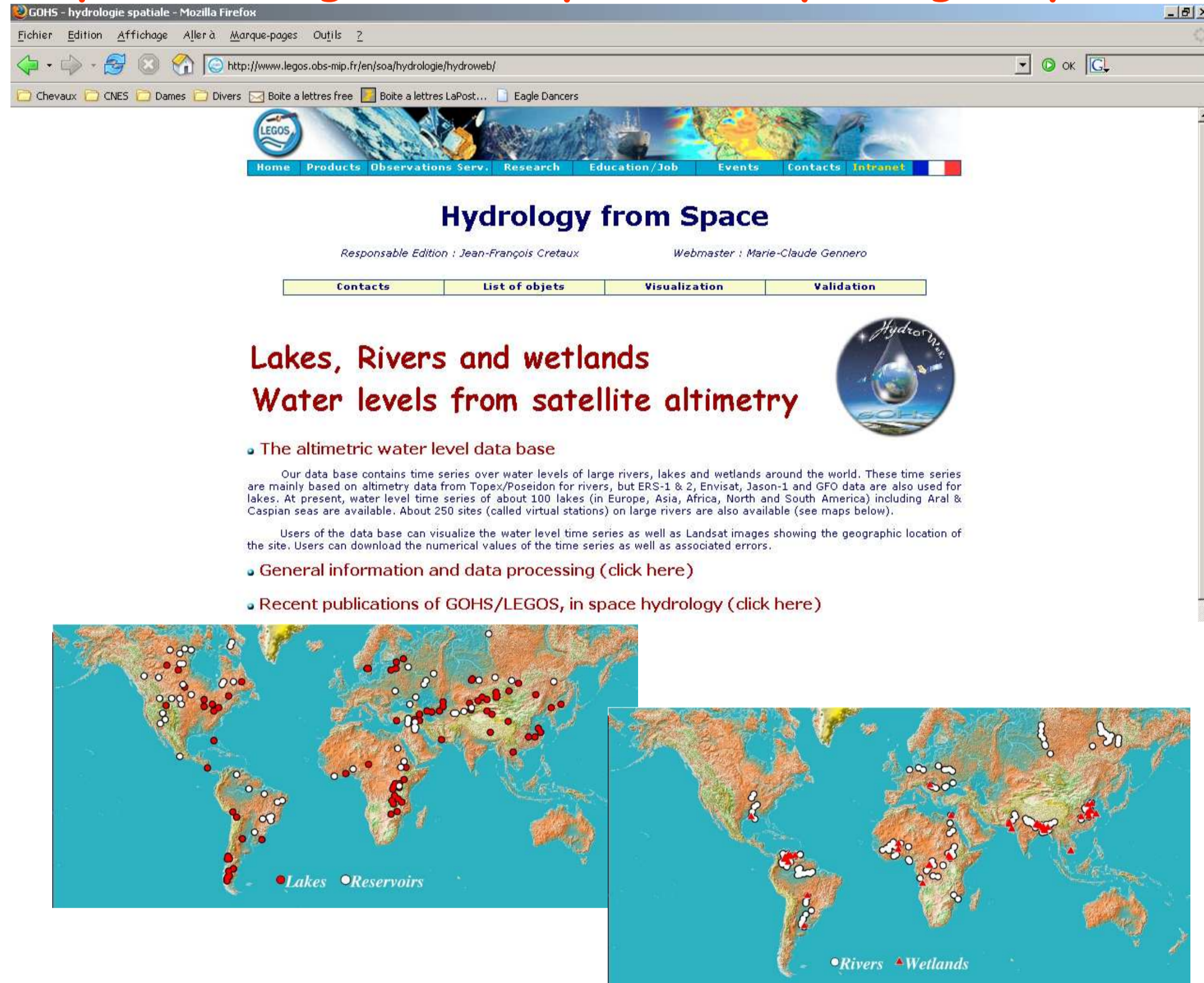
One example over lake Kariba (Africa) using Envisat



HydroWeb

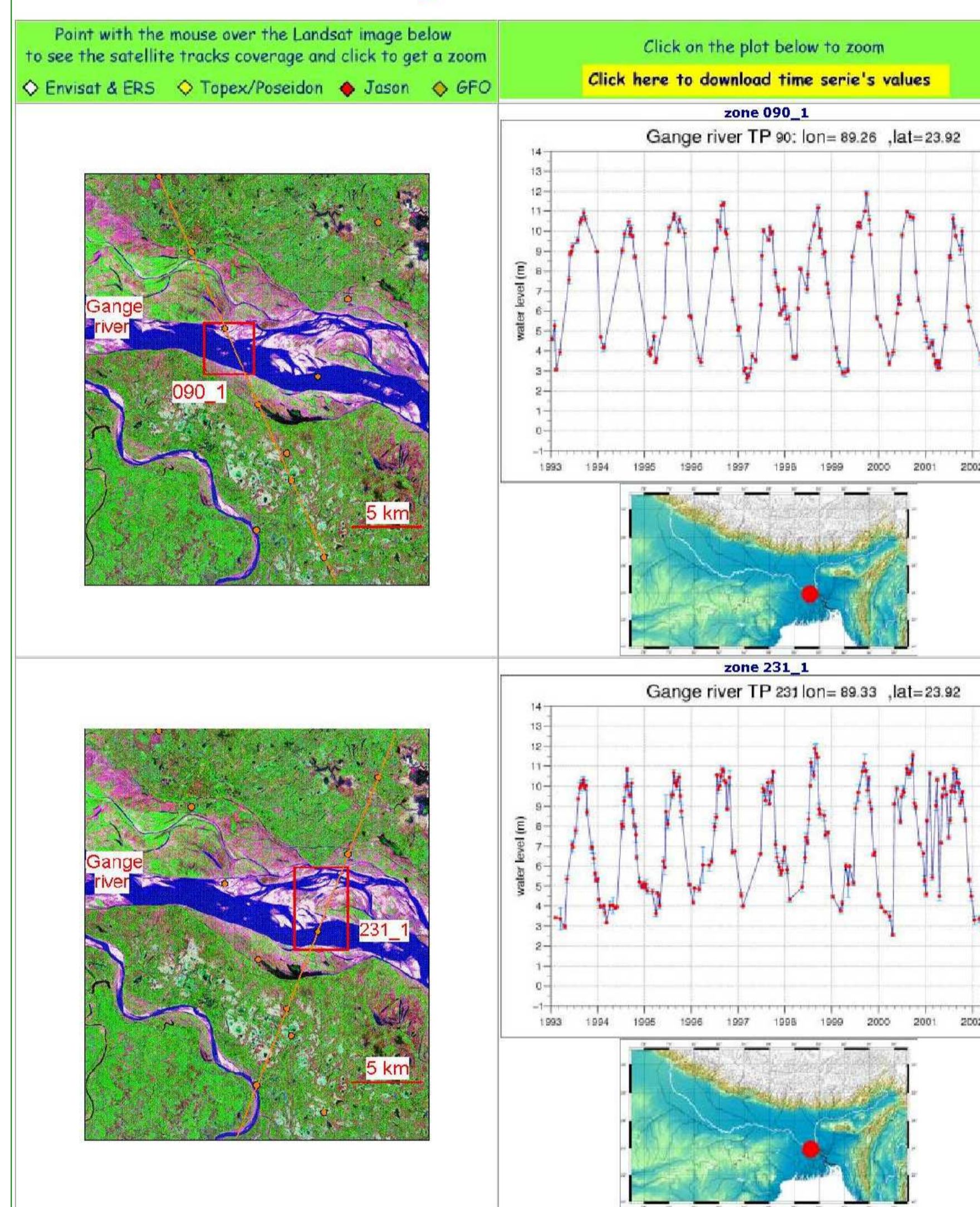
Website developed at LEGOS (F) to produce water level timeseries over rivers and lakes. Those timeseries are computed using altimetry data of Topex/Poseidon for rivers, and mixing of altimetry data for the lakes (Topex/Poseidon, Jason, ERS-1&2, Envisat, GFO).

<http://www.legos.obs-mip.fr/soa/hydrologie/hydroweb>

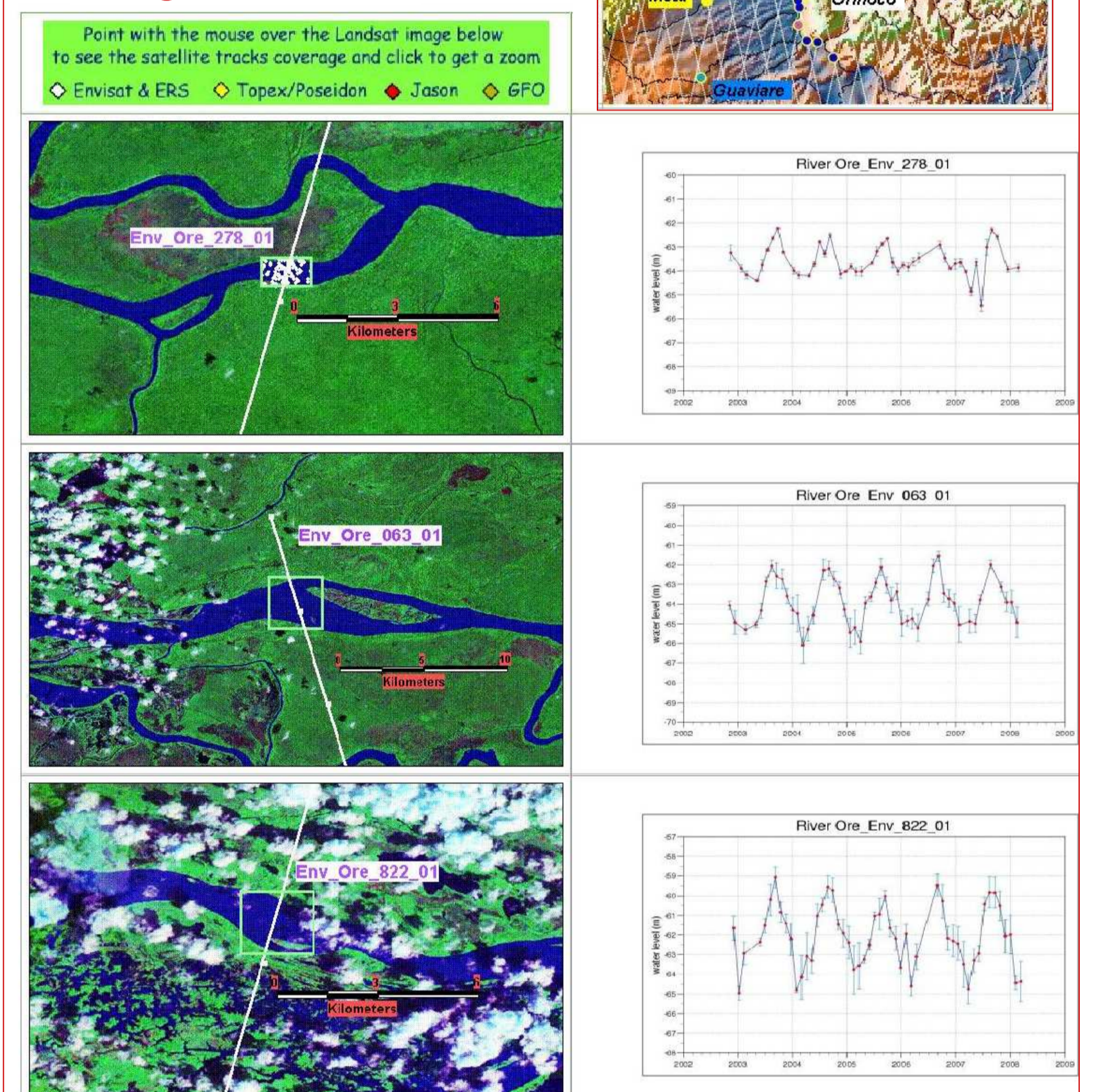


Examples over rivers using Envisat or Topex/Poseidon

Virtual stations over Ganges river

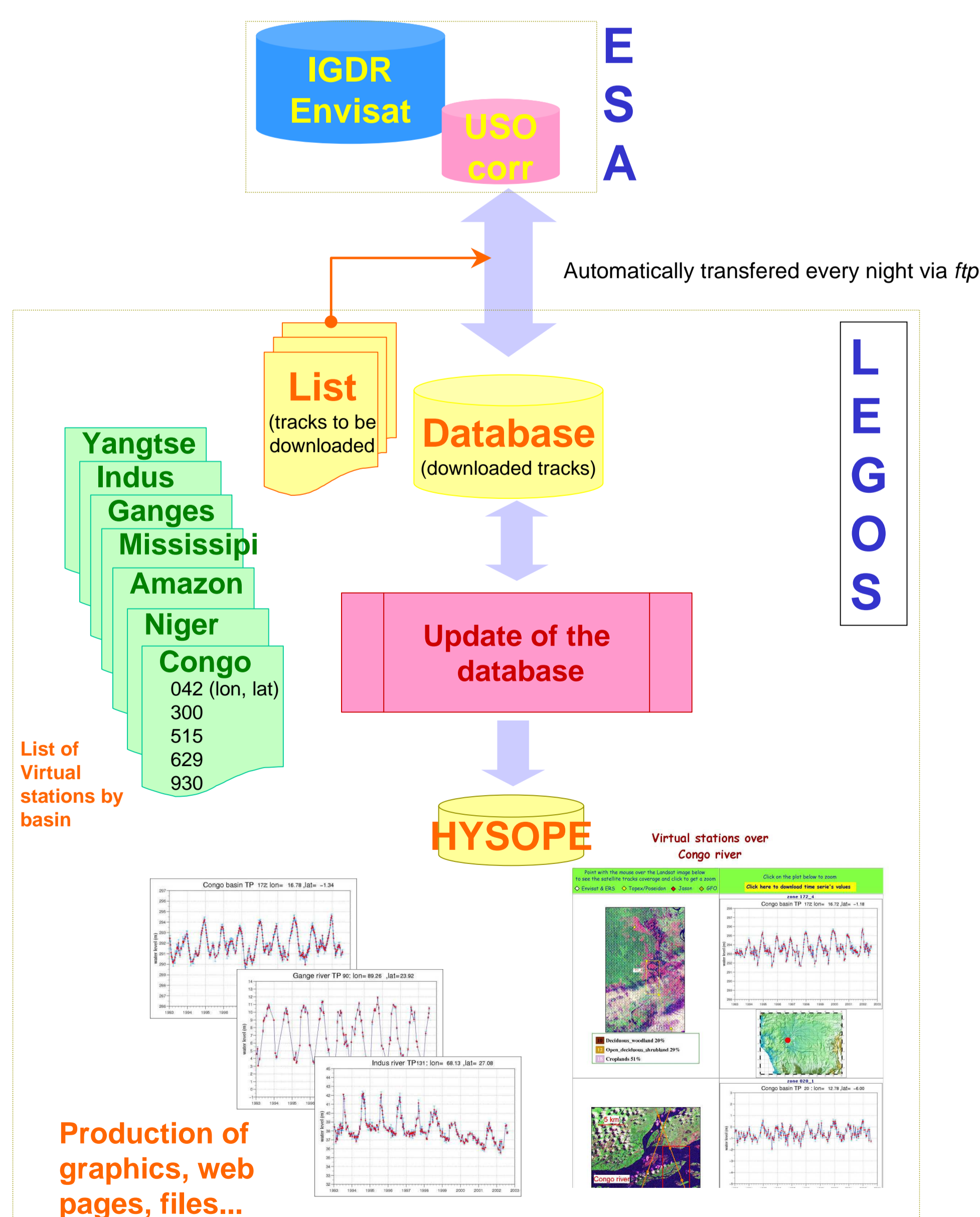


Virtual stations over Orinoco basin (using Envisat data)

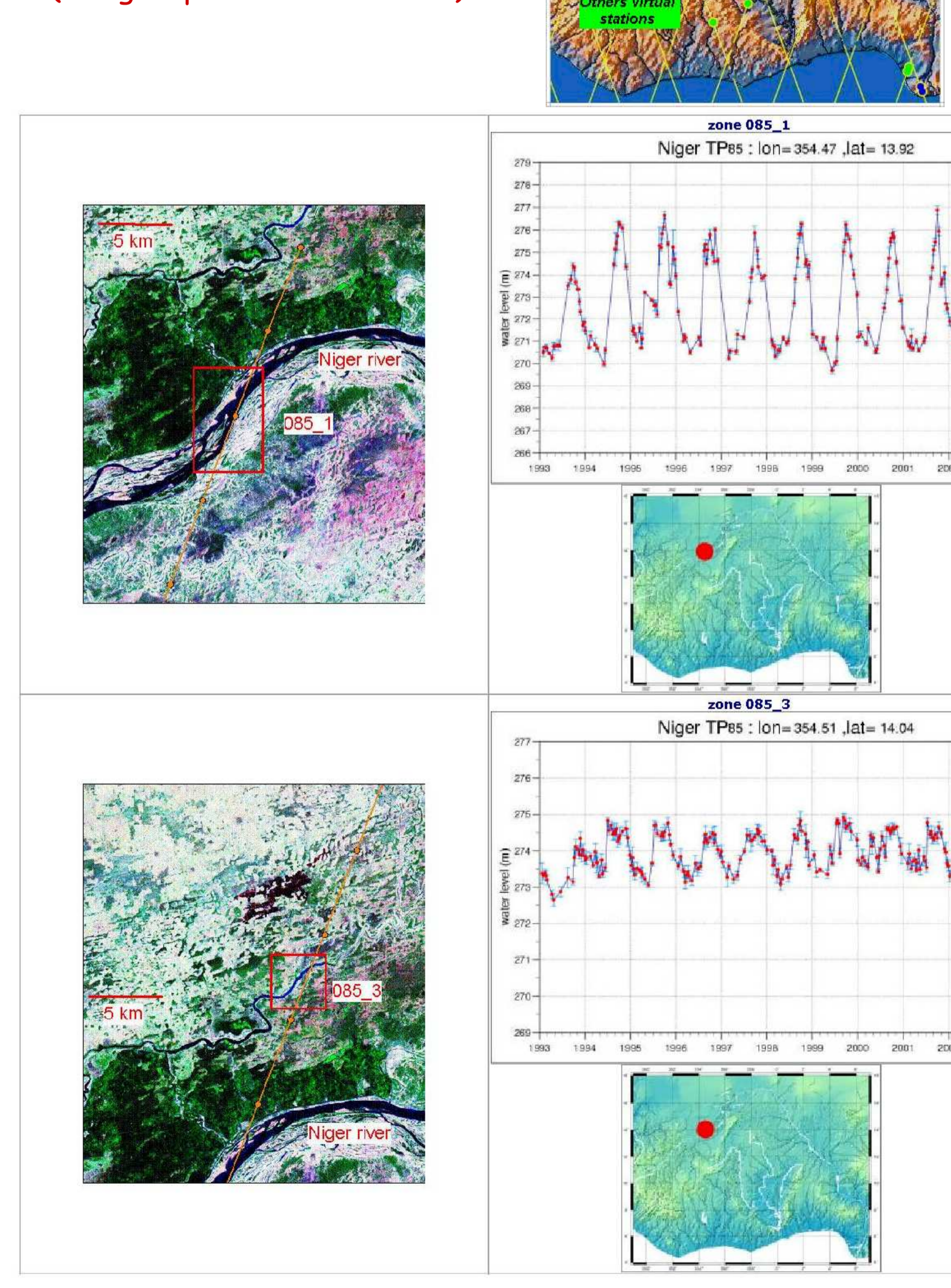


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Near real time water levels from Envisat



Virtual stations over Niger river (using Topex/Poseidon data)



(using Envisat data)

Virtual stations over Niger basin (Niger river)

